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GLOSSARY OF TERMS RELATING TO IRON AND STEEL

PART VIII STEEL TUBES AND PIPES

(*First Revision*)

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GLOSSARY OF TERMS RELATING TO IRON AND STEEL

PART VIII STEEL TUBES AND PIPES

(First Revision)

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GLOSSARY OF TERMS RELATING TO IRON AND STEEL

PART VIII STEEL TUBES AND PIPES

(First Revision)

0. FOREWORD

0.1 This Indian Standard (Part VIII) (First Revision) was adopted by the Indian Standards Institution on 21 May 1976, after the draft finalized by the Metal Standards Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first published in 1962. As a result of experience gained during these years, certain modifications have been made in some of the meanings of various terms. The Sectional Committee while issuing this revision felt it desirable to issue the standard in separate parts. Other parts of the standard are as follows:

Part I	General metallurgy, heat treatment and testing
Part II	Steel making
Part III	Hot-rolled steel products (excluding sheet and strip)
Part IV	Steel sheet and strip
Part V	Bright steel bar and steel wire
Part VI	Forging (including drop forging)
Part VII	Wrought iron

0.3 This standard has been prepared to assist the manufacturers and the users in uniform interpretation of the common terms used in the iron and steel industry.

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1. SCOPE

1.1 This standard (Part VIII) is intended to convey the meanings of the terms relating to steel tubes and pipes.

2. TERMINOLOGY

2.1 Air Heater Tubes — Tubes used for heating air by means of hot gases, the air passing either inside or outside the tubes.

2.2 American Standard Pipe — Pipe having a particular series of related outside diameters and thicknesses in common use in America.

2.3 Ammonia Pipe — *See* **2.129.**

2.4 Artesian Well Tubes — A term embracing all tubes used in water well boring.

2.5 As Drawn — In the cold drawn condition without subsequent heat treatment.

2.6 Asphalt Coating — *See* **2.15.**

2.7 Asphalt Lining — *See* **2.16.**

2.8 Asphalt Sheathing — *See* **2.17.**

2.9 Atomic Hydrogen Welded Tube — Tube made by forming strip, usually of stainless or heat-resisting steel, into tubular form, and welding the joint by the atomic hydrogen process.

2.10 Automatic Process — *See* **2.124.**

2.11 Bakers' Oven Tubes (Oven Tubes) — Tubes partially filled with water and closed at the ends, in which steam is generated for the heating of bakers' ovens.

2.12 Bar Drawing — *See* **2.96.**

2.13 Bevelling — The forming of a bevel on tube ends, generally for end-to-end welding.

2.14 Bitumen-Asbestos Mastic — Material consisting of asphaltic bitumen dissolved in hydrocarbon solvent together with inert filler in the form of finely divided asbestos. The mastic is applied cold, generally to the external surface.

2.15 Bitumen Coating (Asphalt Coating) — An internal and/or external coating obtained either by dipping in a bath of molten asphaltic bitumen or by painting or dipping in a suitable asphaltic bitumen solution.

2.16 Bitumen Lining (Asphalt Lining) — An internal protection consisting of suitable bitumen, usually reinforced with inert mineral filler, applied hot by centrifugal means.

2.17 Bitumen Sheathing (Asphalt Sheathing) — An external protection consisting of bitumen reinforced with inert mineral filler which may be of a fibrous nature. The sheathing is applied hot.

2.18 Bituminous Solution — A paint made from bituminous materials dissolved in appropriate hydrocarbon solvents.

2.19 Boiler Tubes (Smoke Tubes) — Tubes which form part of the heating surface of a boiler, as distinct from superheater tubes. The tubes may contain water and be surrounded by the furnace gases as in a water tube boiler, or they may act as flues and be surrounded by water as in a smoke tube boiler.

2.20 Bore — Commonly used to indicate inside diameter (*see also* **2.102**).

2.21 Bright Electrically Welded Tube — Electrically welded tube made from cold rolled or cold rolled close-annealed strip.

2.22 Brine Pipe — *See* **2.129.**

2.23 Buttweld Process — A process for making welded steel or wrought iron tubes, in which a length of strip, at welding temperature, is drawn through a 'bell' or 'die' which forms it into a cylinder, and at the same time forces its edges into such intimate contact as to weld them together.

2.24 Cased Tube — A close-joint tube of steel, over which a close-joint or seamless or welded tube of another metal is drawn.

2.25 Casing (Oil Well Casing) — Tubes used for lining bore holes to prevent caving in of the surrounding strata and the undesired entry of water.

2.26 Chamfering — The removal of sharp edges.

NOTE — The term is practically synonymous with 'bevelling', but has a less restricted application.

2.27 Close-Joint Tube — Tube made by forming strip into the desired section, the edges being brought close together but not welded.

2.28 Cold Drawing — Reducing the cross-sectional area of a tube, when cold, by drawing through a die. The tubes are occasionally pushed through the die. (*See also* **2.96**, **2.122** and **2.148**).

2.29 Cold Drawn Welded Tube — Welded tube subsequently cold drawn.

2.30 Cold Sinking — Reducing the cross-sectional area and diameter of a tube by drawing when cold through a die.

2.31 Composite Tube — Tube made from two or more tubes of the same or different materials one inside the other, the tubes being in intimate contact.

2.32 Compressed Air Pipe — Pipe used for the conveyance of compressed air.

2.33 Condenser Tubes — Tubes used in the conversion of a vapour into a liquid by cooling.

2.34 Continuous Weld Process (Fretz-Moon Process) — A process for making welded steel tubes, in which a continuous strip is passed (by joining the ends of the coils) through a tunnel furnace, from which it emerges at welding temperature to enter a series of rolls which form it into a tube and weld the abutting edges together. The resulting continuous tube is cut to the desired length.

2.35 Coupler — *See* **2.37**.

2.36 Coupler Tubes — *See* **2.38**.

2.37 Coupling (Coupler) — An alternative term for the socket used in a screwed and socketed joint.

2.38 Coupling Tubes (Coupler Tubes) — Tubes of suitable dimensions for the production of couplings.

2.39 Cressing — *See* **2.166**.

2.40 Crop End — The portion of a tube cut from the ends as process discard.

2.41 Deburring — Removing the fin from the outside of an electrically welded tube.

2.42 Defrasing (Frasing) — Removing the uneven edges at the ends of cut tubes.

2.43 Descaling — Removal of surface scale from a hot worked or heat treated product by pickling, shot-blasting, etc. Also removal of scale during hot working by the application of water, coal dust, brushwood, oil, etc.

2.44 Die — A tool having a prepared hole through which tubes are passed in the drawing or pushbench process.

2.45 Die Lines — Longitudinal lines on the outer surface of a drawn tube, caused by localized seizure between the tube and the die (*see also* **2.142**).

2.46 Dimensions

2.46.1 *Approximate* — A near value to which tubes may be ordered and not necessarily the value to which manufacturing tolerances apply.

2.46.2 *Maximum* — The largest value obtained in actual measurement or permitted by a specified tolerance on a given dimension.

2.46.3 *Minimum* — The smallest value obtained in actual measurement or permitted by a specified tolerance on a given dimension.

2.47 Draft or Draught — The amount of reduction in the cross-sectional area during rolling or drawing; often as in drawing, it might refer only to reduction in thickness.

2.48 Drill Pipe (Oil Drill Pipe) — Tubes forming the stem of the cutting tool used in the rotary drilling of bore holes.

2.49 Drive Pipe — Screwed and socketed tubes in which the ends butt in the middle of the socket. They are normally restricted in use to certain well boring operations where heavy percussion loads are imposed.

2.50 Eccentricity — Lack of coincidence of the centre of the bore of a tube with that of the outside circumference, resulting in variation in wall thickness.

2.51 Economizer Tubes — *See* **2.61**.

2.52 Electric Resistance Buttwelded Tube — Electrically welded tube made from steel strip which is formed into tubular shape and welded by passing a heavy current across the longitudinal joint.

2.53 Ends Bevelled — *See* **2.13**.

2.54 Ends Rounded — *See* **2.139**.

2.55 Ends Squared — The ends cut perpendicular to the length.

2.56 Erhardt Process — *See* **2.125**.

2.57 Extrusion — The production of a seamless tube from a hot billet by forcing the latter to flow through a die over a mandrel positioned centrally in the die.

2.58 Extrusion Billet — A short length of billet or hot rolled bar, either solid or with a central hole.

2.59 Extrusion Discard

a) A small portion of the billet which is left in the container at the end of the stroke of the extruding ram.

b) A short length which is cut from the front end of the extruded tube.

2.60 Feed Pipe — A pipe through which water is forced into a boiler.

2.61 Feed Water Heater Tubes (Economizer Tubes) — Tubes used in the heating of feed water before it enters a boiler.

2.62 Fin Cutting — Removing the external and/or internal fin from an electrically welded tube.

2.63 Fin (Flash) — A projecting rib of matel running along the weld of an electrically welded tube.

2.64 Flanging

a) The turning back of a small portion of a tube end at right angles to the axis of the tube.

b) The attaching of flanges to the tube ends.

2.65 Flash — *See* **2.63**.

2.66 Flue Tubes — *See* **2.164**.

2.67 Forming — Shaping strip into tubular form by passing through suitably shaped rolls.

2.68 Frasing — *See* **2.42**.

2.69 Fretz-Moon Process — *See* **2.34**.

2.70 Gas-List — A long established price list applicable to a type of screwed and socketed tubes and associated fittings, sizes 150 mm nominal bore and smaller. For many years the term 'Gas' has had no special significance, although the list originated for tubes for gas.

2.71 Gas Pipe — Pipe used for the conveyance of gas.

2.72 Gauge — Thickness in terms of a standard wire gauge number or in any accepted unit.

2.73 Grooving — The machining of a groove or grooves on the ends of tubes or the faces of flanges for jointing purposes.

2.74 Half Hard — Cold drawn with a smaller reduction in cross-sectional area than usual, giving a hardness intermediate between that in the annealed condition and that produced by a normal drawing pass.

2.75 Handling Tight — The degree of tightness necessary in screwing on sockets or fittings to prevent their removal except by the use of wrench.

2.76 Hand Tight — The degree of tightness obtained in assembling screwed joints by hand.

2.77 Heat Exchanger Tubes — Tubes used in a unit for the purpose of transferring heat from one medium to another.

2.78 Hessian Wrapping — *See* **2.185**.

2.79 Hollow — The hot finished tube from which a cold drawn tube is manufactured.

2.80 Hot Drawn — Tubes which have been reduced in diameter, or diameter and thickness both, by drawing hot on a mandrel through a die.

2.81 Hot Finished — Tubes made and finished by a hot-working process. Generally applied to seamless tubes.

Note — Other kinds of tubes are also hot finished, for example, by the continuous weld process and lapweld process.

2.82 Hot Rolled — Tubes produced hot by one of the several processes employing rolls.

Note — It is incorrect to use the term except in this sense and, generally speaking, the term is obsolete.

2.83 Hydraulic Lapweld Process (Water-Gas Lapweld Process) — A process for making large diameter welded tubes in which a steel plate is bent into cylindrical shape in bending rolls. The overlapping edges are heated for short distances to welding temperature and subsequently welded by pressing them together by hydraulic power. The heating and pressing is repeated until the length is welded. The tube is then heated all over and passed through rounding rolls. For certain sizes, two plates may be required to make the necessary circumference.

2.84 Hydraulic Piercing — Hot forging by hydraulic power in which a billet is partially pierced to form a hollow cylinder preparatory to being elongated and formed into a tube.

2.85 Hydraulic Pipe — Pipe used for the conveyance of a liquid under pressure in connection with hydraulic machinery.

2.86 Inter Pass Annealing — Annealing applied to tubes after one or more cold drawing passes, in order to soften them for further cold drawing.

2.87 Jarring Marks — Transverse marks on the surface of a cold drawn tube, caused by irregular movement through the die.

2.88 Joints — The term 'joints' refers to the means of connecting lengths of pipe, or of connecting pipes to other units. The more common types are as follows:

a) *Flange*

  1) *Fixed flange* — A bolted joint made with flanges which are attached to the ends of the pipes (*see* Fig. 1A).

  2) *Loose flange* — A bolted joint made with flanges which abut on shoulders formed on the ends of the pipes (*see* Fig. 1B).

b) *Flexible* — A term applied to joints which permit the assembly of pipes at angles of varying degrees in order to facilitate pipe laying. They may also permit movement of the pipes after assembly (*see* Fig. 1C).

c) *Screwed*

  1) *Screwed and socketed* (*screwed and coupled*) — A joint in which two pipe ends, each screwed externally, are connected by means of an internally screwed socket or coupling (*see* Fig. 1D).

  2) *Screwed inserted* — A joint in which an externally screwed end of a pipe is connected to an expanded and internally screwed end of another pipe (*see* Fig. 1E).

  3) *Screwed flush butt and butt* — A joint formed by screwing one pipe end into an adjoining pipe end. It differs from the screwed inserted joint in that the screw on both ends is formed about the middle of the tube wall, the inner and outer surfaces of the tubes being flush when connected (*see* Fig. 1F).

d) *Spigot and Socket* — A joint in which one pipe end, the spigot, fits into a connecting pipe end, which is expanded to form a socket. Usually there is a space between the spigot and socket in which material, for example, lead, is compacted to obtain leakproofing (*see* Fig. 1G).

e) *Welded* — A joint in which the pipes are connected by welding (*see* Fig. 1H).

2.89 Lathe Straightened — A misnomer. A term which refers to specially straightened tubes whose straightness is checked by revolving them in a lathe.

2.90 Lengths — Associated with the following terms.

a) *About* — Lengths with less variation than that of random lengths, usually amounting to ± 150 mm.

b) *Average* — Lengths which may vary over a specified range, an average value being maintained.

c) *Effective* — The actual length that a tube contributes when assembled in a stretch of pipe, for example, the effective length of a spigot and socket tube is the overall length less the length to which the spigot of one pipe enters the socket of the next.

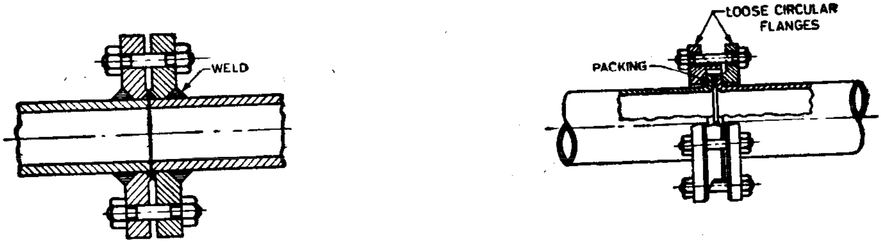
d) *Exact* — A term applied to tubes cut to a specified length but on which a small tolerance is allowed.

e) *Half Random* — Lengths in the range of one-half of the usual random lengths.

f) *Jointers* — Two lengths jointed together to make a single length within the random length range.

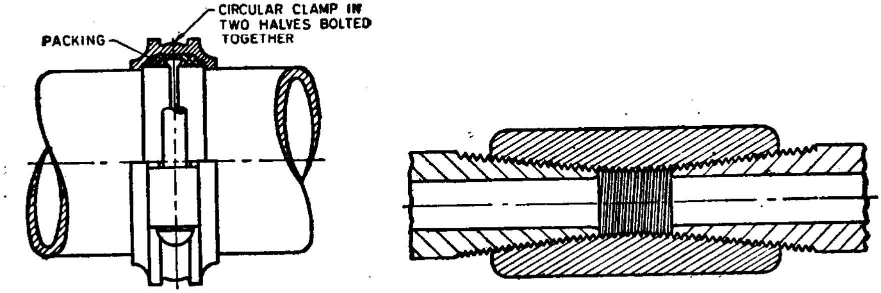
g) *Multiple* — Lengths from which a number of pieces of a specified length may be cut with the minimum of waste.

h) *Random* — Normal manufacturing lengths which may vary over a range of several metres. Alternatively, a length range agreed to between the purchaser and the manufacture.



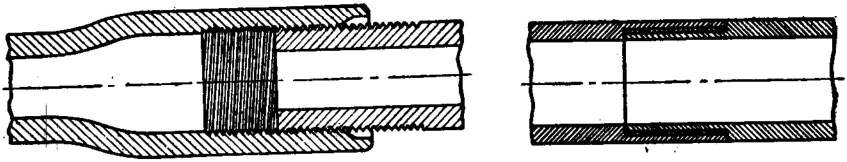
1A Fixed Flange

1B Loose Flange



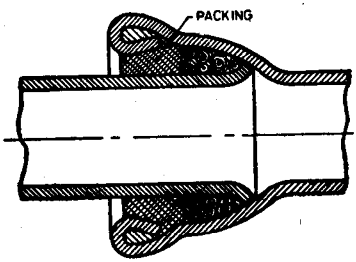
1C Flexible

1D Screwed and Socketed (Screwed and Coupled)

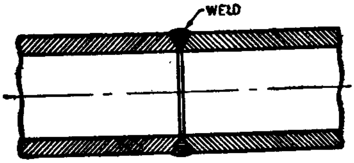


1E Screwed Inserted

1F Screwed Flush Butt and Butt



1G Spigot and Socket



1H Welded

Fig. 1 Pipe Joints

2.91 Lifting — Increasing the bore of a drilled billet prior to extrusion, by forcing a tool of suitable diameter through it in the hot condition.

2.92 Lime Washing — Lime wash applied to bitumen sheathed or wrapped tubes.

2.93 Line Pipe (Oil Line Pipe) — An American term usually associated with the oil industry and applying to pipes used for the conveyance of oil or natural gas, excluding the pipes in the well.

2.94 Machine Tight — The pre-determined degree of tightness obtained on screwing on sockets or fittings by means of a power-driven machine.

2.95 Main — A broad term denoting usually a single line of pipe for carrying a bulk supply of a gas or liquid.

2.96 Mandrel Drawing (Bar Drawing) — Cold drawing in which a tube is drawn through a die together with a mandrel which supports it internally. The tube and the bar are occasionally pushed through the die together. The release of bar is accomplished by rolling which has the affect of expanding the bore of the tubes sufficiently to release the mandrel.

2.97 Mannesmann Process — A process in which either a solid or a semi-pierced cylindrical piece of steel, at forging temperature, is formed into a thick hollow cylinder by being passed through angled barrel rolls, and at the same time, over a plug of suitable size and shape.

2.98 Mechanical Tubes — A term applied broadly to tubes used for mechanical engineering purposes as distinct from tubes used for structures or for the conveyance of fluid.

2.99 Middling — The inter-pass cutting of tubes into two or more lengths during cold drawing operations, when they become too long for subsequent passes on the drawbench.

2.100 Moulding Box — A container, usually of metal, which is placed round a joint and into which molten bitumen is poured and allowed to set. This ensures continuity of the protection of sheathed or otherwise protected pipes.

2.101 Moulding Mixture — A mixture consisting of bitumen reinforced with inert mineral filler.

2.102 Nominal Bore — A bore, which may be the actual bore or an approximation to it, which is standardized formally or by general usage. The tubes have standard outside diameters but thicknesses according to the purpose for which they are used.

2.103 Nozzling — Preparing a hollow for cold drawing by reducing the diameter at one end sufficiently to hold the head of a pin, the latter being used to pull the hollow through the die.

2.104 Oil Drill Pipe — *See* **2.48.**

2.105 Oil Line Pipe — *See* **2.93.**

2.106 Oil Well Casing — *See* **2.25.**

2.107 Oil Well Tubing — *See* **2.176.**

2.108 Open-Joint Tube — Tube made by forming a strip cold into the desired section, an appreciable gap being left between the edges.

2.109 Ovality — Lack of roundness of the bore or outside circumference of a tube of nominally circular cross section.

2.110 Oven Tubes — *See* **2.11.**

2.111 Painting — Applying paint as a rust preventive or for identification purposes.

2.112 Pass — One passage of the tube through a die as in drawing, or through a train of rolls as in reducing.

2.113 Pickling — The removal of scale by chemical or electrochemical treatment with dilute acids or other chemicals, followed by washing.

2.114 Pick Up — Adhesion or partial welding of particles of steel from the tube to the surface of the die or plug during cold drawing.

2.115 Pilfer-Proof — The degree of tightness adopted in the assembly of screwed sockets to prevent their being readily removed by hand.

2.116 Pilger Process — A process for making seamless steel tubes, in which a solid cylindrical piece of steel, at forging temperature, is first formed into a thick hollow cylinder, then forged into a tube on mandrel by means of gap rolls known as pilger rolls.

2.117 Pipe — *See* **2.173.**

2.118 Piping — Synonymous with tubes or pipes, but the term is usually restricted to assembled pipework.

2.119 Pitted Surface — A surface containing small cavities resulting from unsatisfactory processing.

2.120 Plain Ends — Ends of tubes which are cut at right angles to the longitudinal axis and without additional workmanship.

2.121 Plug — *See* **2.122.**

2.122 Plug Drawing — Cold drawing in which a seamless tube is drawn through a die and over a stationary plug.

2.123 Plug Lines — Longitudinal lines in the bore of a cold drawn tube, caused by localized seizure between the tube and the plug during plug drawing (*see also* **2.122** and **2.142**).

2.124 Plug Mill Process (Automatic Process) — A process for making seamless steel tubes, in which a round bar is first pierced in a rotary piercing mill at forging temperature and then passed through driven grooved rolls over a plug.

2.125 Pushbench Process (Erhardt Process) — A process for making seamless steel tubes in which a billet of suitable shape, at forging temperature, is first formed into a thick hollow cylinder, generally with a solid end, then placed on a long mandrel bar and 'pushed' through a series of successively decreasing dies or rolls.

2.126 Reaming — The removal of the ragged inside edge at the ends of cut tubes.

2.127 Reducing — A term which usually denotes reducing the diameter of a hot tube by passing it through successive pairs of rolls. In its broader application the term includes reducing the diameter of tubes for a short distance at the ends.

2.128 Reeling

a) Loosening a tube from a mandrel bar by passing the tube and mandrel between barrel shaped rolls which simultaneously rotate and draw them forward causing a slight expansion of the tube. It is commonly used in the pushbench process and in mandrel drawing.

b) The straightening of tubes by passing them through inclined rolls.

2.129 Refrigeration Pipe (Ammonia Pipe; Brine Pipe) — Pipe used for conveying refrigerants.

2.130 Rising Main — A main (or pipeline) used to convey a fluid from a lower level to a higher level. When the main is vertical, it is called vertical rising main.

2.131 Rodding — The passing of a short plug (sometimes of a specified diameter) through small diameter tubes to ensure a clear bore.

2.132 Roller Finish — A term used to describe the special requirements and tolerances applied to roller tubes.

2.133 Roller Tubes — Tubes used as rollers in paper, textile and other machinery.

2.134 Roll Lapweld Process — A process for making welded steel tubes, in which a length of steel strip or plate is bent into cylindrical shape with its edges overlapping. It is then brought to welding temperature and passed through rolls over an internal mandrel, when the pressure of the rolls welds the overlapping edges and produces a tube of uniform thickness.

2.135 Roll Marks — Periodic surface defects, due to some imperfection on the surface of a roll.

2.136 Rotary Elongation — The extension of a hollow cylinder at forging temperature, by passing it through specially shaped and angled rolls which rotate the piece and pass it over a plug.

2.137 Rotary Forge Process — A process for making seamless steel tubes, in which a solid piece of steel of suitable shape, at forging temperature, is formed in multiple stages into a hollow cylinder, then forged into a tube on a mandrel by means of gap rolls.

2.138 Rotary Piercing — The forming of a hollow cylinder, at forging temperature, by passing a solid cylindrical piece of steel through specially shaped rolls which simultaneously rotate the piece and pass it over a plug.

2.139 Rounding — A hot or cold operation on the body or on the ends of tubes to obtain special accuracy of roundness where this is necessary.

2.140 Run — *See* **2.161**.

2.141 Scaffolding Tubes — Tubes used for scaffolding.

2.142 Scores — Longitudinal surface roughness (*see also* **2.45** and **2.123**).

2.143 Screwing (Threading) — The cutting of a screw thread on a tube or tubular product.

2.144 Seamless Steel Tube or Pipe — A tube without a longitudinal joint or weld.

2.145 Section Tubes — Tube with a cross section other than circular.

2.146 Shell Thickness — A term synonymous with thickness. Its use is not recommended.

2.147 Sink — The reduction in the diameter of a tube during cold or hot drawing.

2.148 Sinking — Cold or hot drawing of tubes without the use of an internal plug or mandrel bar. By this means, the wall thickness is increased while the tube is increased in length and reduced in diameter.

2.149 Size of Tube or Type — Generally defined by nominal bore and thickness, or outside diameter and thickness.

2.150 Sizing — A term which usually denotes the passing of a tube between sizing rolls (or cold drawing it) in order to bring its outside diameter within the permitted tolerance. In its more general application it covers also sizing of ends of tubes and tubular products, and differs from rounding which does not necessarily produce any change in mean outside diameter.

2.151 Skelp — Strip.

NOTE — Historically, the term is coined from the word 'skelping', an operation in which long narrow strip was beaten into the shape of a tube which was heated to a very high temperature and rolled, resulting in forge welding of the seam.

2.152 Slug — The cylindrical piece of steel pushed out during the piercing of a solid billet at the commencement of extrusion.

2.153 Smoke Tube — *See* **2.19.**

2.154 Socket — Commonly refers to the internally screwed sleeve for connecting the screwed pipe ends of a screwed and socketed oint (*see also* **2.37** *and* **2.88**).

2.155 Spinning — The revolving of a tube against a former in order to alter its shape over a short distance.

2.156 Standard Tubes or Pipes — Tubes or pipes which have become 'standard' as regards material, outside diameter and thickness by virtue of demand.

2.157 Staving (Thickening) — A term denoting the thickening or upsetting of the ends of tubes, or forming of the ends into special shapes by means of end pressure.

2.158 Stay Tubes — Tubes used to support the end plates of a boiler. They may also serve as smoke tubes.

2.159 Steam Pipes — Pipes used for the conveyance of steam.

2.160 Still Tubes — Tubes used in various types for stills, generally in oil refinery service.

2.161 Stretch (Run) — A specified length of pipe comprising two or more lengths jointed together.

2.162 Stripping — Removing the mandrel bar from a tube.

2.163 Structural Tubes — Tubes used for structural purposes.

2.164 Superheater Flue Tubes (Flue Tubes) — Large diameter smoke tubes used as a 'nest' for superheater tubes.

2.165 Superheater Tubes — Tubes through which the steam generated in a boiler is passed in order to raise its temperature, that is, tubes used for the conversion of saturated steam into superheated steam.

2.166 Swaging (Cressing) — Reducing the diameter, usually for short distances, at the ends of tubes.

2.167 Swelling — Increasing the diameter for short distances at the ends of tubes.

2.168 Tagging — Preparing a tube for cold drawing by reducing the diameter of a short length at one end, the reduced portion, or tag, being gripped for pulling through the die.

2.169 Tapping — The cutting of an internal screw thread.

2.170 Thickening — *See* 2.157.

2.171 Threading — *See* 2.143.

2.172 Tolerance — The permitted deviation from a specified dimension or weight, usually expressed as ‘ plus ’ or ‘ minus ’ on that quantity.

2.173 Tube (Pipe) — A long, hollow, open-ended object of circular or other cross section. The terms ‘ tube ’ and ‘ pipe ’ are often used synonymously.

NOTE — In tubular sections pipes and tubes are distinguished by size but the terms are generally synonymous.

2.174 Tubes, Types of — The following are the types of tubes classified according to the process of manufacture:

Atomic hydrogen welded tube
Automatic process tube
Bright electrically welded tube
Buttweld process tube
Cased tube
Close-joint tube
Cold drawing tube
Cold drawn welded tube
Composite tube
Continuous weld process tube
Electric resistance buttwelded tube
Erhardt process tube
Extrusion tube
Fretz-Moon process tube
Hot drawn tube
Hot finished tube
Hydraulic lapweld process tube
Mannesmann process tube
Open-joint tube
Pilger process tube
Plug mill process tube
Pushbench process tube
Roll lapweld process tube
Rotary forge process tube
Seamless steel tube or pipe
Water-gas lapweld process tube or pipe

2.175 Tubing — Sometimes used to denote tubes collectively, but has a restricted use in the oil industry to denote oil well tubing.

2.176 Tubing, Oil Well — Tubes used for conveying oil from the bottom of the well to the delivery line.

2.177 Varnishing — Coating tubes with varnish as a rust preventive. The varnish may be air or stove hardened.

2.178 Vertical Rising Main — *See* 2.130.

2.179 Wall Thickness — A term synonymous with thickness.

2.180 Water-Gas Lapweld Process — *See* 2.83.

2.181 Water Pipe — Pipe used for the conveyance of water.

2.182 Weight of Tubes — Commonly specificed in metric units, that is, kilograms per metre, and calculated from the outside diameter and thickness. For steel tubes other than stainless, weight is based on 0·785 kg/cm^2 of cross-sectional area per metre run.

2.183 Welded Tube or Pipe — A tube with a longitudinal weld.

2.184 Weldless Tube — Another term for seamless tube, now little used.

2.185 Wrapping — An external protection consisting of a spiral overlapping wrapping of suitable material impregnated and coated with bitumen or other protective compound.